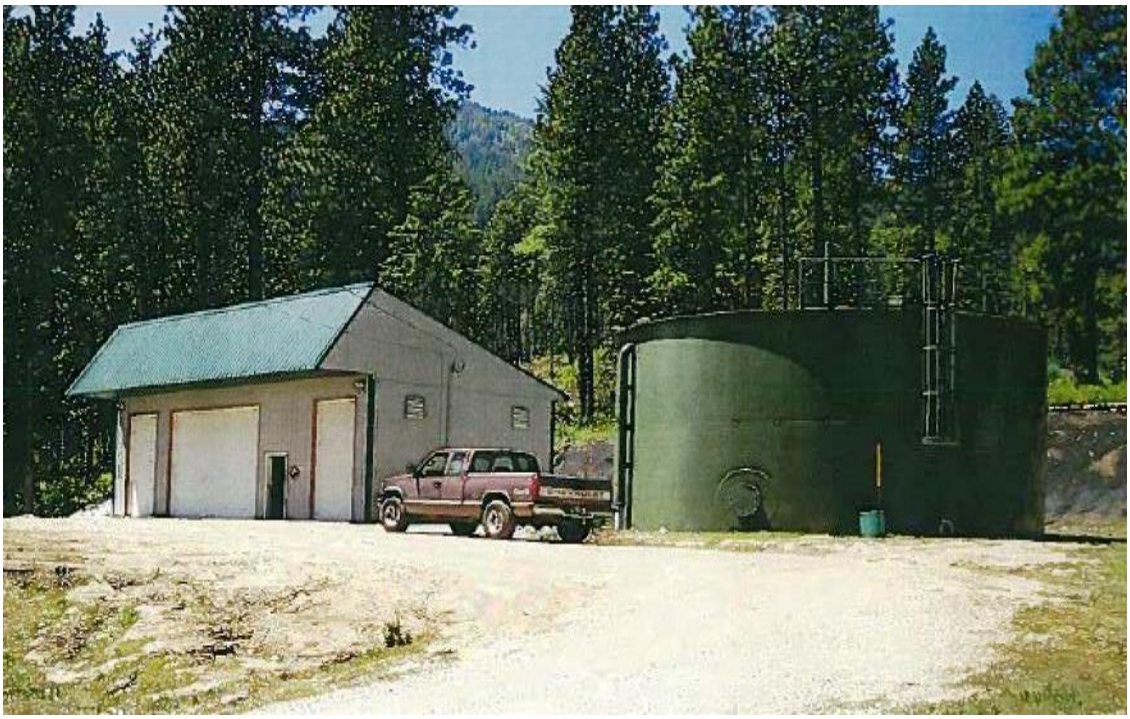
Drinking Water State Revolving Fund Green Project Reserve

- Final –



# Castle Mountain Creeks Home Owners Association Lead Service Line Replacement Project

## SRF Loan #DW 1704 (pop. 400)

## $355,600

## Final Green Project Reserve Justification

### Business Case GPR Documentation

REPLACES LEAD SERVICE LINES, FIXTURES, AND APPURTENANCES (Water Efficiency). Business Case GPR per the criteria requirements 2.4-1…*reducing water consumption*; per 2.4-3: *Efficient water use…reducing the amount of energy required by a drinking water system…*; also per 2.4-4: *Proper water infrastructure management should address where water losses could be occurring in the system and fix or avert them.* ($133,804).

State of Idaho SRF Loan Program

December 2018

Business Case

# Replacement of Leaking Service Lines, Meters, & Fixtures[1]

## Summary

The water service lines and meters in the Castle Mountain Creeks subdivision required replacement in order to: (i) reduce water losses; (ii) reduce pumping costs; and (iii) provide non-toxic service lines.

- Estimated loan amount = $355,600
- Energy efficient (green) portion of loan = $133,804 (38%) (installed $)


Old Leaded Service Lines and Fittings

## Background

- A high percentage of the water generated by Castle Mountain Creeks was lost due to leaks in the distribution system. The pre-1986 galvanized service lines and fittings in Castle Mountain Creeks subdivision may be one reason for the lost water.
- Old meters and pit fittings are another possible cause of significant water loss in the distribution system.
- In addition, in-home kitchen faucets not only contained lead but were old and inefficient, averaging flows of 4 to 5 gpm[2].

## GPR Eligibility

**SERVICE LINES, METERS AND APPURTENANCE REPLACEMENT:**

- As leaking materials are replaced, the amount of water lost decreases, which reduces the total system water demand, and
- Saves energy by reducing pumping costs.
- Meter and appurtenance replacement ensures accurate flow measurement and encourages customer water conservation efforts.


New Meter: Top (Plan) View


New Meter: Side View

**IN-HOME KITCHEN FAUCETS:**

- There were 3 faucet replacements in total:

| No. Holes | Type/Model/ Manufacturer of Replacement Faucet | Efficiency Rating or Flow (gpm) of New Faucet | Old Faucets* to be Replaced by New Model | Number of Each type to be Replaced | Estimated Age of Old Faucet | Estimated Flow (gpm) of Old Faucet** | Water Savings (gal/yr)*** |
|---|---|---|---|---|---|---|---|
| 2 | Exquisite Green | 2.0 | Heffner | 1 | 1973 | 5.0 | 28,142 |
| 3 | Grohe Ladylux Plus | 2.2 | Ferguson | 1 | 1978 | 4.5 | 21,575 |
| 1 | Delta Leland | 1.8 | Allen | 1 | 1980 | 4.0 | 20,637 |
| | | | | | | **Total =** | **70,354** |

*Last name of faucet owner ** *Water Efficiency Management Guide Residential Kitchen and Laundry,* EPA 832-F-016b, November 2017 page 1: pre-1992 kitchen faucet flow range from 3 to 7 gpm; ***page 5, per USDOE: (Old flowrate – New flowrate) x 25.7 minutes/household/da x 365 days/yr = Gallons saved/year.

Therefore, new in-home kitchen faucet replacements are GPR-eligible, qualifying for SRF funding, as they contribute to increased water efficiency of the overall water system[3].

[1] 4-18-17 Communication with Tim Farrell, P.E., Mountain Waterworks
[2] *Water Efficiency Management Guide Residential Kitchen and Laundry,* EPA 832-F-016b, November 2017
[3] 9-20-18 Anderer, EPA to McNeill, IDEQ

# (Con't) **Leaking Service Lines, Meters, & Fixtures**

## Conclusion

- The replacement of leaking components of the distribution system conserves water and saves energy by reducing the amount of pumping required. New kitchen faucets also contribute to overall system efficiency, being at least 100% more water-efficient than the old fixtures.


- **GPR Costs**: Installed GPR costs are:

| | |
|---|---|
| SERVICE LINES (33) = | $114,728 |
| METERS & APPURTENANCES (4) = | $17,351 |
| KITCHEN FAUCETS (3) = | $1,725 |
| **Total = $133,804** | |

- **GPR Justification**: The replacement of leaking, leaded drinking water service lines and appurtenances as recommended in the Facility Planning Study is GPR-eligible by a Business Case (Water Efficiency) GPR per 2.4-1…*reducing water consumption*; 2.4-3: *Efficient water use…reducing the amount of energy required by a drinking water system…therefore, there are also energy and financial savings*; also GPR per 3.5-5: *Projects that achieve the remaining increments of energy efficiency.*

---

**Installed replacement faucets**:

**Exquisite Green**

*Heffner* (1973)

**Grohe Ladylux**

*Ferguson* (1978)

**Delta Leland**

*Allen* (1980)